

REMARKS

Claims 1-3, 9-21, and 25-32 are pending in this application. Reconsideration in view of the following remarks is respectfully requested.

1. 35 U.S.C. §103(a)

A. Lee et al. in view of Wang et al. or Okumura et al.

The Office Action rejects claims 1, 9-11, 13-14, and 27 under 35 U.S.C. §103(a) as being unpatentable over *Lee et al.* (U.S. Patent No. 6,288,493 or JP 2001-085196, hereinafter "*Lee*") in view of *Wang et al.* (U.S. Patent Publication No. 2003/0111181, hereinafter "*Wang*") or *Okumura et al.* (U.S. Patent No. 6,177,646, hereinafter "*Okumura*"). The rejection is respectfully traversed.

The Office Action states that "the configuration of the claimed coils is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed coils is significant." See page 4, lines 3-5 of the Office Action.

Applicants respectfully submit that the application as filed provides evidence of the significance of the configuration of the coils compared to *Lee*. As described in the original disclosure, Figures 4A and 4B "show the distribution of radial direction components of magnetic fields produced by a conventional secular coil antenna." See the present application, which for convenience will be cited from the published application, paragraph [0012] of U.S. Patent Publication No. 2004/0079485. Comparing Figures 4A and 4B with *Lee*'s circular antennas illustrated in Figures 2A, 3A, 3B and 5 illustrates that the discussion of the "prior art" in the present application is similar to the antenna of *Lee*. The applications goes on to compare Figures 4A

and 4B (similar to *Lee*) with embodiments of the claimed invention discussing and illustrating differences in calculated inductance between the prior art antennae and embodiments of the claimed antennae. See Figures 12A-12G of the present application and paragraphs [0079]-[0090].

Wang cannot be combined with *Lee*. *Wang* discloses, as previously discussed in the September 26, 2006 Response pages 10-14, which is incorporated herein, “two adjacent loops 260 [that] appear to merge in a single current path.” See paragraph [0029] of *Wang*. Furthermore, “portion[s] of the conductors 205a, 205b lying within the radial path 230b are sufficiently close to provide a fairly pure transition between the opposing magnetic fields of the two loops 260a, 260b.” See paragraph [0029] of *Wang* (emphasis added).

Applicants respectfully submit that because *Lee* discloses a circular antenna device “for generating a uniform distribution of plasma” while separately *Wang* discloses “two adjacent loops” that the combination of *Lee* and *Wang* would result in either destroying the uniformity of *Lee* or destroying the “fairly pure transition between the opposing magnetic fields of the two loops” of *Wang*. For example, if one of the loops of *Wang* was placed in the antenna device of *Lee*, the “resonant state” between the first and second antennas of *Lee* would probably be destroyed (see Abstract of *Lee*) by the presence of a non-circular antenna loop because *Lee* requires circular loops in an antenna device “for generating a uniform distribution of plasma.” On the other hand, *Wang*’s “fairly pure transition between the opposing magnetic fields of the two loops” would be destroyed if one of the loops was replaced with the circular loop of *Lee* because there would not appear to be a “fairly pure transition” (see paragraph [0029] of *Wang*).

Therefore if one or more loops from *Lee* were combined with one or more loops from *Wang*, the advantages of both *Lee* and *Wang* would be destroyed.

Additionally, Applicants respectfully submit that “the configuration of the claimed coils” is not merely a “matter of choice” as the particular configuration of the claims is significant as discussed throughout the present application, wherein evidence is provided in Figures 12A-12G of the present application.

Concerning *Okumura*, Applicants respectfully submit that in Figures 3, 14-16, and 21 and their descriptions of a “zigzag pattern” is that of a “resistance-heating heater” and not an antenna. See col. 8, lines 28-45 of *Okumura*. Rather, the antenna is illustrated in Figure 20, *etc.* and have a circular or spiral shape that is clearly different from the resistance heater illustrated in Figure 21, for example.

For at least the reasons set forth above, as well as the reasons set forth in the September 26, 2006 Response, Applicants respectfully submit that claim 1 is allowable. Claims 9-11, 13-14, and 27 depend from claim 1 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested.

B. *Lee* in view of *Wang* or *Okumura* and further in view of *Hemker et al.* or *Bailey, III et al.*

The Office Action rejects claims 15-18 under 35 U.S.C. §103(a) as being unpatentable over *Lee* in view of *Wang* or *Okumura* and further in view of *Hemker et al.* (U.S. Patent Publication No. 2004/0011467, hereinafter “*Hemker*”) or *Bailey, III et al.* (U.S. Patent Publication No. 2003/0010454, hereinafter “*Bailey*”). The rejection is respectfully traversed.

Applicants respectfully submit that as *Lee* in view of *Wang* or *Okumura* is applied as to claims 1, 9-11, 13-14, and 27 above, that *Lee*, *Wang* and *Okumura* fail

to disclose or suggest all the features of claim 1 from which claims 2, 3, 12, and 25-26 depend. *Hemker* and *Bailey* fail to cure the deficiencies of *Lee*, *Wang* or *Okumura*. *Hemker* and/or *Bailey* were previously discussed in the Response filed on February 10, 2006 and incorporated herein.

Applicants respectfully submit that similar to the reasons discussed above with respect to claim 1, as well as those discussed in the September 26, 2006 and February 10, 2006 Responses, that these cited references fail to disclose or suggest all the features of claims 28 and 32. Claims 29-31 depend from claim 28, and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested.

C. *Lee* in view of *Wang* or *Okumura* and further in view of *Kwon et al.* or *Chen et al.*

The Office Action rejects claims 19-21 under 35 U.S.C. §103(a) as being unpatentable over *Lee* in view of *Wang* or *Okumura* and further in view of *Kwon et al.* (U.S. Patent No. 6,653,988, hereinafter "*Kwon*") or *Chen et al.* (U.S. Patent No. 6,164,241, hereinafter "*Chen*"). The rejection is respectfully traversed.

Claims 15-18 depend from claim 1 and the Office Action states that *Lee*, in view of *Wang* or *Okumura* as applied to claims 1, 9-11, 13-14, and 27 above is applied here. Thus, Applicants respectfully submit that for the reasons discussed above with respect to claim 1, that *Lee*, *Wang* or *Okumura* fail to disclose or suggest all the features of claim 1 from which claims 15-18 depend. *Kwon* and/or *Chen* fail to cure the deficiencies of *Lee*, in view of *Wang* or *Okumura* for at least the reasons set forth in the September 26, 2006 Response. As *Kwon* and *Chen* were previously

discussed in the Responses filed on February 10, 2006 and September 26, 2006, the discussions of *Kwon* and *Chen* are incorporated herein.

For at least the reasons discussed above, as well as the reasons set forth in the previously filed Responses, Applicants submit that claims 19-21 are allowable. Withdrawal of the rejection is respectfully requested.

D. *Matsuda et al.* in view of *Wang* or *Okumura*

The Office Action rejects claims 1, 9-11, 13-14, and 27 under 35 U.S.C. §103(a) as being unpatentable over *Matsuda et al.* (U.S. Patent Publication No. 2003/0111181, hereinafter "*Matsuda*") in view of *Wang* or *Okumura*. The rejection is respectfully traversed.

Matsuda, similar to *Lee*, discloses "a plurality of coils disposed concentrically." See Abstract of *Matsuda*. As mentioned above, circular coils as discussed above with *Lee* and concerning *Matsuda* here, cannot be combined with *Wang* as such combination would destroy the uniform distribution of *Matsuda* (see above discussion concerning *Lee* and *Wang*) or would destroy the "fairly pure transition between the opposing magnetic field of the two loops" of *Wang* (see above discussion of *Lee* and *Wang*). Furthermore, *Okumura* does not disclose or suggest an antenna with features recited in claim 1. Rather, as mentioned above *Okumura* discloses spiral antennae and resistance heaters.

For at least the reasons set forth above, Applicants respectfully submit that claim 1 is allowable. Claims 9-11, 13-14, and 27 depend from claim 1 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested.

E. *Matsuda* in view of *Wang* or *Okumura* and further in view of *Howald et al.*

The Office Action rejects claims 2-3, 12, 25-26, and 28-32 under 35 U.S.C. §103(a) as being unpatentable over *Matsuda* in view of *Wang* or *Okumura* and further in view of *Howald et al.* (U.S. Patent No. 6,842,147, hereinafter "*Howald*"). The rejection is respectfully traversed.

Howald fails to cure the deficiencies of *Lee* in view of *Wang* or *Okumura* for at least the reasons set forth above and in the September 26, 2006 Response as incorporated herein.

Additionally, as illustrated in Figure 3 of *Howald*, it appears that *Howald* is disclosing circular antenna elements. See col. 6, lines 48-65. *Howald* also discloses that single or multiple spiral antenna elements, wound as flat spirals or wound to lie on the surface of a hemisphere can be used. See col. 7, lines 1-4 of *Howald*. As mentioned above, *Wang* cannot be combined with circular antenna such as those disclosed in *Lee*, *Matsuda*, and now *Howald*. Thus, Applicants respectfully submit that *Howald* in view of *Wang* destroys the functionality of either *Howald* or *Wang* and thus these references cannot be combined.

Applicants respectfully submit that for the reasons discussed above concerning *Matsuda*, *Wang*, *Okumura* and *Howald*, claims 2-3, 12, 25-26, and 28-32 are allowable. Withdrawal of the rejection is respectfully requested.

F. *Matsuda in view of Wang or Okumura and further in view of Hemker or Bailey*

The Office Action rejects claims 15-18 under 35 U.S.C. §103(a) as being unpatentable over *Matsuda in view of Wang or Okumura and further in view of Hemker or Bailey*. The rejection is respectfully traversed.

Applicants respectfully submit for the reasons discussed above concerning *Matsuda, Wang, Okumura and Hemker or Bailey*, that claims 15-18 are allowable. Withdrawal of the rejection is respectfully requested.

G. *Matsuda in view of Wang or Okumura and further in view of Kwon or Chen*

The Office Action rejects claims 19-21 under 35 U.S.C. §103(a) as being unpatentable over *Matsuda in view of Wang or Okumura and further in view of Kwon or Chen*. The rejection is respectfully traversed.

Applicants respectfully submit for the reasons discussed above concerning *Matsuda, Wang, Okumura and Kwon or Chen*, that claims 19-21 are allowable. Withdrawal of the rejection is respectfully requested.

H. *Howald in view of Wang or Okumura*

The Office Action rejects claims 1, 9-11, 13-14, 27-28, and 30-31 under 35 U.S.C. §103(a) as being unpatentable over *Howald in view of Wang or Okumura*. The rejection is respectfully traversed.

Howald is discussed above and in the September 26, 2006 Response. Applicants hereby incorporate the discussion from above and the September 26, 2006 Response.

Furthermore, as mentioned above, *Okumura* discloses a resistance heater rather than an antenna including first and third serpentine coils bent in a zigzag pattern, as recited in claim 1.

For at least the reasons set forth above with respect to claim 1, *Howald* in view of *Wang* or *Okumura* cannot be combined to make obvious claims 28 and 32. Claims 9-11, 13-14, and 27 depend from claim 1, and claims 30-31 depend from claim 28 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested.

I. *Howald* in view of *Wang* or *Okumura* and further in view of *Lee* or *Matsuda*

The Office Action rejects claims 2-3, 12, 25-26, 29, and 32 under 35 U.S.C. §103(a) as being unpatentable over *Howald* in view of *Wang* or *Okumura* and further in view of *Lee* or *Matsuda*. The rejection is respectfully traversed.

Applicants respectfully submit that for at least the reasons set forth above concerning *Howald*, *Wang*, *Okumura*, *Lee*, and *Matsuda*, that claims 2-3, 12, 25-26, 29, and 32 are not obvious. Withdrawal of the rejection is respectfully requested.

J. *Howald* in view of *Wang* or *Okumura* and further in view of *Hemker* or *Bailey*

The Office Action rejects claims 15-18 under 35 U.S.C. §103(a) as being unpatentable over *Howald* in view of *Wang* or *Okumura* and further in view of *Hemker* or *Bailey*. The rejection is respectfully traversed.

Applicants respectfully submit that for at least the reasons set forth above concerning *Howald*, *Wang*, *Okumura*, *Hemker*, and *Bailey*, that claims 15-18 are not obvious. Withdrawal of the rejection is respectfully requested.

K. *Howald* in view of *Wang* or *Okumura* and further in view of *Kwon* or *Chen*

The Office Action rejects claims 19-21 under 35 U.S.C. §103(a) as being unpatentable over *Howald* in view of *Wang* or *Okumura* and further in view of *Kwon* or *Chen*. The rejection is respectfully traversed.

Applicants respectfully submit that for at least the reasons set forth above concerning *Howald*, *Wang*, *Okumura*, *Kwon*, and *Chen*, that claims 19-21 are not obvious. Withdrawal of the rejection is respectfully requested.

2. Conclusion

Applicants invite the Examiner to contact Applicants' representative at the telephone number listed below if any issues remain in this matter, or if a discussion regarding any portion of the application is desired by the Examiner.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge
our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: August 28, 2007

By:

A handwritten signature in black ink, appearing to be 'Laura L. Lee', written over a horizontal line.

Laura L. Lee
Registration No. 48752

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620